

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference A45119H	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/JP2004/017837	International filing date (<i>day/month/year</i>) 01.12.2004	Priority date (<i>day/month/year</i>) 02.12.2003
International Patent Classification (IPC) or national classification and IPC C12P17/00 // (C12P17/00, C12R1:465) (C12P17/00, C12R1:66) (C12P17/00, C12R1:80)		
Applicant MERCIAN CORPORATION		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising: a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows: <input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). <input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items: <input checked="" type="checkbox"/> Box No. I Basis of the report <input type="checkbox"/> Box No. II Priority <input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability <input checked="" type="checkbox"/> Box No. IV Lack of unity of invention <input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement <input type="checkbox"/> Box No. VI Certain documents cited <input type="checkbox"/> Box No. VII Certain defects in the international application <input type="checkbox"/> Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☐ the drawings:
- sheets _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. IV

Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
 - ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted the claims nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
 - ☒ not complied with for the following reasons:

The feature that is common to claims 1 to 10 the optically active tetrahydrothiophen-3-ol and the items that are associated therewith.

However, as a result of the search it became apparent that documents 1 to 3 disclose optically active tetrahydrothiophen-3-ols (in particular, refer to document 1, claim 5; document 2, example 11; and document 3, usage example 3); therefore, the abovementioned common feature is not novel in as much as said feature is disclosed in the abovementioned documents.

In other words, the abovementioned common feature does not define a contribution over the prior art, and thus is not a special technical feature in the meaning of the second sentence of PCT Rule 13.2.

[Refer to the Supplemental Box]

4. Consequently, this report has been established in respect of the following parts of the international application:

☒ all parts.

☐ the parts relating to claims Nos. _____

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																					
1.	Statement <table border="0"><tr><td rowspan="2">Novelty (N)</td><td>Claims</td><td><u>1-10</u></td><td>YES</td></tr><tr><td>Claims</td><td><u></u></td><td>NO</td></tr><tr><td rowspan="2">Inventive step (IS)</td><td>Claims</td><td><u>1-3</u></td><td>YES</td></tr><tr><td>Claims</td><td><u>4-10</u></td><td>NO</td></tr><tr><td rowspan="2">Industrial applicability (IA)</td><td>Claims</td><td><u>1-10</u></td><td>YES</td></tr><tr><td>Claims</td><td><u></u></td><td>NO</td></tr></table>	Novelty (N)	Claims	<u>1-10</u>	YES	Claims	<u></u>	NO	Inventive step (IS)	Claims	<u>1-3</u>	YES	Claims	<u>4-10</u>	NO	Industrial applicability (IA)	Claims	<u>1-10</u>	YES	Claims	<u></u>	NO
Novelty (N)	Claims		<u>1-10</u>	YES																		
	Claims	<u></u>	NO																			
Inventive step (IS)	Claims	<u>1-3</u>	YES																			
	Claims	<u>4-10</u>	NO																			
Industrial applicability (IA)	Claims	<u>1-10</u>	YES																			
	Claims	<u></u>	NO																			
2.	Citations and explanations (Rule 70.7) <p>Document 1: J. Am. Chem. Soc., 1993, 115 (8), pages 3318 to 3319</p> <p>Document 2: Canadian Journal of Chemistry, 1981, 59 (11), pages 1574 to 1579</p> <p>Document 3: JP 63-287781 A (Pfizer Inc.), 24 November 1988</p> <p>Document 4: JP 4-139140 A (Takasago International Corp.), 13 May 1992</p> <p>Document 5: JP 4-139192 A (Takasago International Corp.), 13 May 1992</p> <p>The inventions set forth in claims 4 to 10 do not involve an inventive step in the light of documents 1 to 5 cited in the international search report.</p> <p>Documents 1 to 5 disclose optically active tetrahydrothiophen-3-ols.</p> <p>At the time the present application was filed, optical resolution methods for gradually oversaturating a racemate-saturated solution that contains an overabundance of one of the enantiomers of the racemate in order to form crystals of the overabundant isomer were well known to a person skilled in the art. In addition, a person skilled in the art could optimize the solvent and</p>																					

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

the temperature conditions that are employed during the crystallization process, as appropriate.

Such being the case, it would have been easy for a person skilled in the art to invent the inventions set forth in claims 4 to 10 of the present application in the light of the inventions disclosed in documents 1 to 5 and the well-known feature that is indicated above.

The inventions set forth in claims 1 to 3 involve an inventive step in relation to documents 1 to 5.

Documents 1 to 5 do not disclose the method for biologically converting tetrahydrothiophen-3-ones into (R)-tetrahydrothiophen-3-ols by means of a preparation that comprises a strain of bacteria belonging to the genus *Penicillium*, the genus *Aspergillus* or the genus *Streptomyces*, or cells that were cultured therefrom. Furthermore, it would not have been easy for a person skilled in the art to conceive of the method in question in the light of the disclosures in documents 1 to 5.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box IV.3

Such being the case, there is no feature that is common to all of the claims. Furthermore, there is no other common feature that can be considered to be a special technical feature in the meaning of the second sentence of PCT Rule 13.2, and thus there cannot be found to be a technical relationship, in the meaning of PCT Rule 13, among these different inventions.

Therefore, claims 1 to 10 clearly do not conform to the requirement of unity of invention.

Consequently, the claims set forth two groups of inventions, as follows:

- (1) the inventions set forth in claims 1 to 3; and
- (2) the inventions set forth in claims 4 to 10.

Document 1: JP 63-287781 A

Document 2: JP 4-139192 A

Document 3: JP 4-139140 A